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MRV *Scotia*

Survey 0718S

REPORT

Dates: 18 – 31 May 2018
Loading: Aberdeen, 15 May 2018
Unloading: Aberdeen, 31 May 2018

In setting the survey programme and specific objectives, etc. the Scientist-in-Charge needs to be aware of the restrictions on working hours and the need to build in adequate rest days and rest breaks as set out in Marine Scotland's Working Time Policy (Notice 34/03). In addition, the Scientist-in-Charge must formally review the risk assessments for the survey with staff on-board before work is commenced.

In the interest of efficient data management it is now mandatory to return the survey report, to I Gibb and the Survey Summary Report (old ROSCOP form) to M Geldart, within four weeks of a survey ending. In the case of the Survey Summary Report a nil return is required, if appropriate

Objectives

1. To assess the hydrographic influences on the aggregation of fish around surface laid oil and gas pipelines during spring.

Location

Site 4

Site	Name	Latitude	Longitude	ID
4	1	59° 4.383' N	2° 48.814' E	FC 1
4	2	59° 4.977' N	2° 46.707' E	FC 2
4	3	59° 3.486' N	2° 50.854' E	CTD3
4	4	59° 3.951' N	2° 51.370' E	
4	5	59° 4.595' N	2° 49.068' E	
4	6	59° 4.139' N	2° 48.517' E	CTD2
4	7	59° 5.243' N	2° 46.758' E	
4	8	59° 4.778' N	2° 46.243' E	CTD1

Site 10

Site	Name	Lat	Long	ID
10	1	58° 57.461' N	2° 37.452' E	CTD1
10	2	58° 56.771' N	2° 39.647' E	CTD2
10	3	58° 56.066' N	2° 41.906' E	CTD3
10	4	58° 56.523' N	2° 42.451' E	
10	5	58° 57.231' N	2° 40.197' E	
10	6	58° 57.915' N	2° 37.992' E	
10	7	58° 57.639' N	2° 37.904' E	FC2
10	8	58° 57.004' N	2° 39.927' E	FC1

Procedure
The non-intrusive survey procedures described below were both applied to survey sites 4 and 10. The weather conditions encountered were favorable enabling all the objectives of the survey to be delivered.

Multibeam Bathymetry
A sound velocity profile (SVP) was collected 500 m outside of each survey location. On completion of the SVP, *MRV* Scotia completed a multibeam swathe along the length of the targeted pipeline. Survey speed was 4 knots. The output was checked for any anomalous features that could interact with other survey equipment. No features were identified.

Trawling and Fish Cages
Trawling using the PT160 to catch fish needed to bait the fish cages was unsuccessful and relied on frozen fish as well as fish caught by rod and line. Cages were deployed at the mid-point and the end-point of one transect. They remained in-situ until the EK60 survey is completed.

EK60, CTD, VM-ADCP, Multibeam Through Water Column and Seabed Videofootage
The collection of fisheries acoustic data involved two parallel transects 5 km in length and 1 km apart running perpendicular to a pipeline (Figure 1).

The maximum survey speeds used during the collection of EK60 data did not exceed 8 knots while VM-ADCP and multibeam data were collected at 5 knots. Each of the techniques was collected independently due to potential interference between the different pieces of equipment.

CTD measurements were taken every 3 hours at the ends and centre point of a transect. Water samples were collected for chlorophyll, salinity and nutrients using the vessel's non-toxic water supply and reversing bottles attached to the CTD.

Multibeam transects was run along the pipeline to collect through water column data for assessing the dimensions of fish aggregations.

Videofootage using a *drop-frame* camera was collected from for the top, middle and bottom stations for each transect. The multibeam data was assessed to identify changes in the seabed substrate. The substrates were ground-truthed using a *drop-frame* camera. The *drop-frame* was deployed 500 m from the pipeline off the stern of the vessel. The *drop-frame* was kept at 1.5 m above the seabed/pipeline and towed using the vessel's bow thrusters at a speed of 1 knot or less (0.5 m per second) on a course perpendicular to the pipeline. Video capability on the *drop-frame* was vertically mounted.

On completion of the survey work *MRV Scotia* returned to Aberdeen Harbour on 30 May in preparation for unloading on 31 May.

Submitted:
P. Hayes
06 December 2019

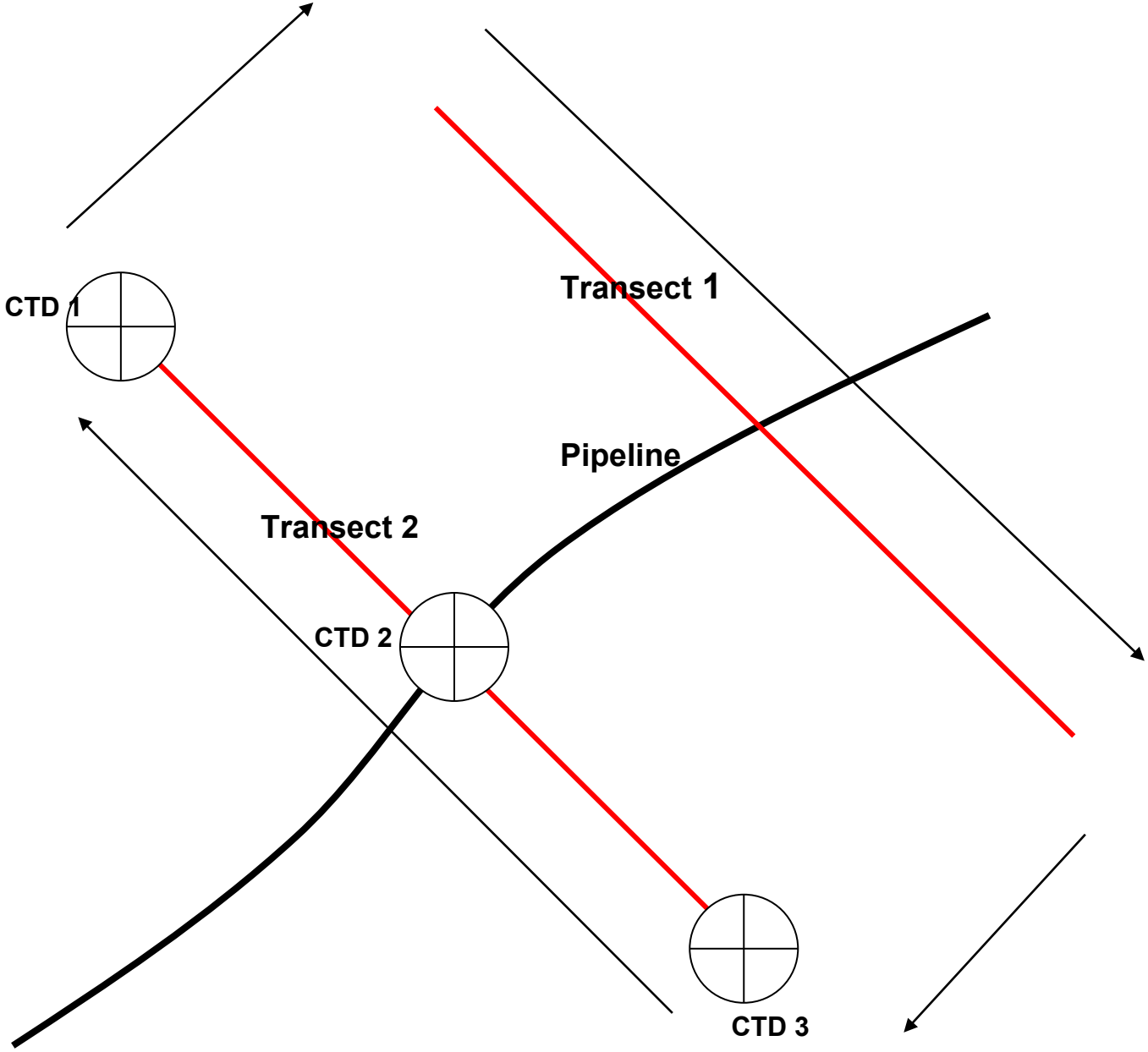

Figure 1 showing a schematic diagram of the survey design for collecting acoustic data, VM-ADCP data and CTD data over a 24 hour period. Direction of travel when collecting acoustic data is shown by the black arrows.